

REMARKS

I. The Claims

Claim 17 has been amended and claims 23 to 24 have been canceled. Applicants reserve the right to present the subject matter of the canceled claims in a continuation application. Claims 1-22 are now pending.

II. The Rejections

A. The Rejection of Claims 1-20 Under 35 U.S.C. §103(a) over Watanabe and Nakamura in view of Japanese Patent No. 53-58536

In the Office Action, the Examiner has withdrawn the previous rejection under 35 U.S.C. §103(a) over Watanabe and Nakamura and replaced it with a rejection that now relies upon Japanese Patent No. 53-58536 (the "Japanese Patent"). Applicants respectfully traverse the rejection of claims 1-20 over Watanabe and Nakamura in view of the Japanese Patent for the reasons that follow.

Neither Watanabe nor Nakamura disclose or suggest the use, in a powder coating composition, of a compound comprising the reaction product of an epoxy resin having at least one hydroxyl group and a lactone, wherein the compound has a melting temperature in the range of about 40 to about 65°C. Watanabe makes a passing reference to the possibility that modified epoxy resins disclosed therein may be used in a powder paint, see col. 6, lines 67-68, but at no point does Watanabe disclose or suggest the use of a modified epoxy resin having a melting temperature of about 40 to about 65°C in a powder coating composition. Indeed, all of the modified epoxy resins described in the Examples in Watanabe were used in the production of liquid coatings. Nakamura, for its part, does not disclose any modified epoxy resin that has a melting temperature of about 40 to about 65°C. Indeed, all of the modified epoxy resins prepared in the Examples of Nakamura had a softening temperature of over 100°C.

Likewise, the Japanese patent also fails to disclose or suggest the use, in a powder coating composition, of a compound comprising the reaction product of an epoxy resin having at least one hydroxyl group and a lactone, wherein the compound has a melting temperature in the range of about 40 to about 65°C. As a result, the Japanese patent does nothing to overcome the deficiencies of Watanabe and Nakamura. Therefore, the combination of Watanabe and/or Nakamura with the Japanese Patent fails to disclose or suggest all of the recitations of claim 1.

Moreover, these combinations of reference contain no teaching, suggestion, or incentive that would have motivated the skilled artisan to combine the prior art teachings in the particular manner claimed. See, e.g., *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313 (Fed. Cir. 2000) ("Particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed."). Accordingly, the Examiner has not, and cannot, establish a *prima facie* case of obviousness of claim 1 over Watanabe and/or Nakamura in view of the Japanese Patent.

In the present invention, a compound comprising the reaction product of an epoxy resin having at least one hydroxyl group and a lactone, wherein the compound has a melting temperature in the range of about 40 to about 65°C, is used as an additive in combination with a film-forming resin in a powder coating composition. Because melting temperature of this additive is within such a range, it is not a free flowing powder. Therefore, to be used effectively in a powder coating composition, this compound is used in combination with other components that do produce a free flowing powder and is used in an amount that does not prevent the production of a free flowing powder coating composition.

The present inventors have discovered that a free flowing powder coating composition can be produced, even with the inclusion of such an additive, to provide a powder coating composition with improved properties; such as improved flow and/or improved leveling, decreased gassing, increased flexibility, and/or improved appearance. See [0023]. There is no disclosure or suggestion in Watanabe or Nakamura that such a compound could be used in a curable powder coating composition in combination with a separate film-forming resin to achieve such results.

As a result, claim 17, which clarifies that the reaction product of an epoxy resin having at least one hydroxyl group and a lactone is present in the powder coating composition claimed therein in an amount of 0.1 to 20 weight percent, is also independently patentable over the cited references. Neither Watanabe nor Nakamura disclose or suggest the use of such a compound in a powder coating composition in such an amount and the Japanese patent does nothing to overcome this deficiency.

Accordingly, the Examiner has not, and cannot, establish a *prima facie* case of obviousness with respect to claim 1 or any claims depending therefrom over Watanabe and Nakamura in view of the Japanese patent. See MPEP 2141.02. As a result, Applicants

respectfully request withdrawal of the pending rejections of claims 1-20 over Watanabe and Nakamura in view of the Japanese patent.

B. The Rejection of Claims 21 and 22 Under 35 U.S.C. §103(a) over Watanabe in view of the Japanese Patent

Because these claims depend from claim 1, they are both patentable over Watanabe in view of the Japanese patent for the reasons discussed above with respect to claim 1. Applicants respectfully assert, however, that claim 21 is also independently patentable over these references.

Claim 21 recites that the epoxy equivalent weight of the compound (a) is 10,000 to 150,000. Watanabe neither discloses nor suggests the use, in a powder coating composition, of a modified epoxy resin having a melting temperature of about 40 to about 65°C and an epoxy equivalent weight of 10,000 to 150,000. Indeed, Watanabe fails to disclose any modified epoxy resin having an epoxy equivalent weight within the claimed range and, notably, the epoxy equivalent weight of all of the modified epoxy resins described in the Examples therein is well outside of the claimed range. The Japanese reference does nothing to overcome this deficiency of Watanabe. Thus, the combination of Watanabe with the Japanese patent does not disclose each and every element of claim 21. As a result, the Examiner has not, and cannot, establish a *prima facie* case of obviousness of claim 21 over Watanabe in view of the Japanese Patent.

C. The Rejection of Claims 1-21 Under 35 U.S.C. §103(a) over JP 53-58536 in view of Watanabe and Nakamura

In the Office Action, the Examiner maintains the previous claim rejections over the Japanese patent in view of Watanabe and Nakamura. Applicants respectfully traverse this rejection for the following reasons.

First, as discussed above with respect to the previous rejections, neither Watanabe nor Nakamura disclose or suggest the use, in a powder coating composition, of a compound comprising the reaction product of an epoxy resin having at least one hydroxyl group and a lactone, wherein the compound has a melting temperature in the range of about 40 to about 65°C. As a result, the cited references contain no teaching, suggestion, or incentive that would

have motivated the skilled artisan to combine the prior art teachings in the particular manner claimed. See, e.g., *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313 (Fed. Cir. 2000) ("Particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.").

Second, as indicated in the Amendment dated September 19, 2006, the Japanese patent describes a powder coating composition consisting of: (1) 50-95 wt % of a polyester having an abundance of hydroxyl groups; (2) 0.5-30 wt% of a polyester with an abundance of carboxyl groups; (3) 3-40 wt % of a blocked polyisocyanate; and (4) 0.5-20 wt% of an epoxy resin. See Japanese Patent at 2.¹ The epoxy resin is the component that reacts with the carboxyl groups in the polyester resin and has an average functionality of two or more epoxy groups per molecule. See Japanese Patent at p. 3. As a result, in the Japanese patent, the epoxy resin acts as a crosslinker with the carboxy functional polyester to form a crosslinked network. A second crosslinked network is formed from the reaction of the blocked polyisocyanate with the hydroxy functional polyester. Thus, the result is two crosslinked networks.

By contrast, the modified epoxy resins described in Watanabe are formed from an epoxy resin having pendant hydroxyl groups and two epoxy groups per molecule. See Watanabe at col. 4, line 55 to col. 5, line 48 and the Examples. However, as indicated in the attached Declaration of Michael Ziegler, these modified epoxy resins have an average of less than two epoxy groups per molecule. See Ziegler Declaration at ¶ 3-4. This is because during reaction of the epoxy resin with the lactone, some of the epoxy groups are consumed. *Id.* Because of this, one skilled in the art would not have been motivated to use the modified epoxy resins described in Watanabe as the epoxy resin in the Japanese reference, because it would not be expected to perform well as a crosslinker for the carboxy functional polyester described in the Japanese reference. *Id.* at ¶ 5. Reduced crosslink density may result in poor physical properties especially hardness, solvent resistance, and flexibility, which is directly contrary to the goals of the compositions described in the Japanese patent. *Id.*

¹ In the Office Action, the Examiner states that the previously submitted translation has not been certified. Such a certification is attached to this Amendment.

Application No. 10/804,684
Amendment Dated January 10, 2007
In Reply to USPTO Office Action Dated October 10, 2006
Attorney Docket No.: 1923A1/RC


Accordingly, the Examiner has not, and cannot, establish a *prima facie* case of obviousness with respect to claim 1, as amended herein, over the Japanese patent in view of Watanabe and Nakamura. See MPEP 2141.02. As a result, Applicants respectfully request withdrawal of the pending rejections of claims 1-21 over the Japanese patent in view of Watanabe and Nakamura.

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CONCLUSION

Applicants respectfully request entry of the foregoing amendment and allowance of the application at an early date.

Respectfully Submitted,


Donald R. Palladino
Attorney for Applicants
Registration No.: 46,976

PPG Industries, Inc.
One PPG Place
Pittsburgh, PA 15272
Telephone: (412) 434-3186
Facsimile: (412) 434-4292

Pittsburgh, Pennsylvania
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